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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,665	11/07/2002	Lin-Kai Bu	HMOP0006USA	8010

27765 7590 12/29/2005

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EXAMINER	
NGUYEN, JENNIFER T	
ART UNIT	**PAPER NUMBER**
2674	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/065,665	BU ET AL.	
	Examiner	Art Unit	
	Jennifer T. Nguyen	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 November 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-26 and 28-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *36,38,40 and 41* is/are allowed.

6)☒ Claim(s) *1,3-17,21-23,28-35,37 and 39* is/are rejected.

7)☒ Claim(s) *18-20 and 24-26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to amendment filed on 10/05/05.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "a detecting circuit" in claims 30 and 32 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 1 recites the limitation "the operating voltages" in claim 1, page 2, lines 17 and 18. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3-8, 13, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (Patent No.: US 6,756,962) in view of Fujino (Patent No. 6,756,959).

Regarding claim 1, referring to Fig. 1, Akimoto teaches a method of driving a liquid crystal display (LCD) device, the method comprising:

providing the LCD device with LCD panel for displaying a plurality of pixels (11) arranged in a matrix format; a voltage selection circuit (3) for outputting a plurality of driving voltage levels according to display data; and a plurality of output buffers (20), each output buffer electrically coupled between the voltage selection circuit and the LCD panel (col. 4, line 34 to col. 5, line 5);

driving pixels located in a row by corresponding output buffers (20) according to corresponding driving voltage levels generated from the voltage selection circuit (col. 5, lines 20-33);

disconnecting the pixels from the corresponding output buffers (col. 5, lines 20-33); and

connecting the pixels driven by the same driving voltage level for equalizing voltages applied on the pixels (col. 5, lines 34-50).

Akimoto differs from claim 1 in that he does not specifically teach turning off the operating voltages inputted into the corresponding output buffers for stopping the output buffers from processing the corresponding driving voltage levels.

Fujino teaches cut off the operating voltages inputted into the corresponding output buffers for stopping the output buffers from processing the corresponding driving voltage levels (col. 16, lines 20-23). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the cut off the operating voltages as taught by Fujino in the system of Akimoto in order to reduce of overall power consumption in the circuit.

Regarding claim 3, Akimoto teaches each output buffer is an operational amplifier (col. 5, lines 51-67).

Regarding claim 4, Akimoto teaches the voltage selection circuit (3) comprises a plurality of conductive wires each for carrying one of the driving voltage levels and a plurality of digital-to-analog decoders (DACs) each for selecting one of the driving voltage levels from the conductive wires according to display data (col. 4, lines 50-67).

Regarding claim 5, Akimoto teaches a plurality of switches each selectively connecting an output terminal (16) of the output buffer to corresponding pixel or connecting an input terminal (17) of the output buffer, to a corresponding pixel (11) (Fig. 1).

Regarding claim 6, Akimoto teaches connecting the output terminal of the output buffer to the corresponding pixel (col. 5, lines 20-44).

Regarding claim 7, Akimoto teaches connecting the input terminal of the output buffer to the corresponding pixel (col. 5, lines 20-44).

Regarding claim 8, Akimoto teaches the pixels predetermined to be driven to the same driving voltage level are connected to the same conductive wire which delivers corresponding driving voltage level (col. 5, lines 20-44).

Regarding claim 13, Akimoto teaches a timing controller (19) for controlling driving (col. 5, lines 1-5).

Regarding claim 28, referring to Figs. 1 and 11, Akimoto teaches a driving device for driving a liquid crystal display (LCD) device, the LCD device comprising an LCD panel having a plurality of pixels arranged in a matrix format, said driving device comprising:

a voltage selection module (3) comprising a power supply (1) having a plurality of power transmission lines (2) for carrying a plurality of voltages, and a plurality of decoders each selectively outputting one of the voltages from the power transmission lines according to display data (col. 4, lines 55-57); and

a plurality of driving units (16, 17, and 20) each electrically coupled to the one of said decoders, each driving unit comprising an output buffer (20) and a switch (16, 17), a first end of said switch being selectively connected to either an output terminal of said output buffer (i.e., switch 16 connects to output terminal of the output buffer 20) or an input terminal of said output buffer (i.e., switch 17 connects to input terminal of the output buffer 20), a second end of said switch being connected to an output terminal of said driving unit;

wherein the first end of said switch is first connected to the output terminal of said output buffer for driving an output voltage of the driving unit toward a voltage transmitted via one of

the power transmission lines of said power supply, and the first end of said switch is then connected to the input terminal of said output buffer for driving the output voltage of said driving unit toward an average voltage generated from averaging voltages at output terminals of said driving units that are connected to the same power transmission line through corresponding decoders (col. 5, lines 20-50, col. 10, lines 25-64).

Akimoto differs from claim 28 in that he does not specifically teach turning off the operating voltages inputted into the corresponding output buffers for stopping the output buffers from processing the corresponding driving voltage levels.

Fujino teaches cut off the operating voltages inputted into the corresponding output buffers for stopping the output buffers from processing the corresponding driving voltage levels (col. 16, lines 20-23). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the cut off the operating voltages as taught by Fujino in the system of Akimoto in order to reduce of overall power consumption in the circuit.

7. Claims 9-12, 29, 30-34, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (Patent No.: US 6,756,962) in view of Udo et al. (Pub. No. US 2002/0050972).

Regarding claims 29, 34, and 39, Akimoto teaches all the limitation except a second switch connected between an output terminal of said driving unit and an output terminal of another driving unit, the output terminal of said driving unit being electrically connected to the output terminal of another driving unit when said second switch is turned on.

Udo teaches a switch (S1-S11) connected between an output terminal of said driving unit and an output terminal of another driving unit (fig. 9), the output terminal of said driving unit

being electrically connected to the output terminal of another driving unit when said second switch is turned on [0009]-[0010]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the switch as taught by Udo in the system of Akimoto in order to approach an average voltage for the adjacent pixels quickly.

Regarding claims 9-12, the combination of Akimoto and Udo teaches a plurality of first switches (16, fig. 1 of Akimoto) each connected between an output terminal of a corresponding output buffer and a corresponding pixel (col. 5, lines 20-33); and

a plurality of second switches (S1-S11, fig. 9 of Udo) each connected between two pixels for selectively connecting the two pixels.

Regarding claims 30 and 32, the combination of Akimoto and Udo further teaches a third switch (S1-S9, fig. 3) electrically connected between the output terminal of said first driving circuit (i.e., output from amplifier B1 to data line D1) and the output terminal of said second driving circuit (i.e., output from amplifier B4 to data line D4); and

a detecting circuit (not shown) for controlling said third switch according to the first input driving data and the second input driving data [0042]-[0043].

Regarding claims 31 and 33, the combination of Akimoto and Udo further teaches the third switch is turned on if the first input driving data and the second input driving data are the same (i.e., the same color data) [0043].

8. Claims 14-17, 21-23, 35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (Patent No.: US 6,756,962) in view of Spiotta et al. (Patent No. US 5,056,012).

Regarding claims 14-17, Akimoto differs from claims 14-17 in that he does not specifically teach the timing controller comprises: "a frequency divider ...to generate a comparison result".

Spiotta teaches the timing controller (23, fig. 4) comprises: a frequency divider (i.e., programmable divider 230) for dividing the frequency of a clock signal according to a predetermined divisor; a counter (i.e., programmable counter 232) for counting the divided clock signal to generate a count value; and a comparator (234) for comparing the count value with a predetermined number to generate a comparison result (col. 5, lines 8-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the clock controller as taught by Spiotta in the system of Akimoto in order to accomplish high speed data transfer between the display system.

Regarding claims 21, 35, 37, Akimoto teaches a liquid crystal display (LCD) device comprising:

an LCD panel for displaying a plurality of pixels arranged in a matrix format;

a voltage selection circuit (3) for outputting a plurality of driving voltage levels according to display data;

a plurality of output buffers (20), each output buffer (20) electrically connected to the voltage selection circuit (3) and the LCD panel for driving the corresponding pixel (11) by corresponding driving voltage level; and

a timing controller (19) for controlling driving of the pixels (Fig. 1, col. 4, line 34 to col. 5, line 5);

wherein the output buffers are disconnected from the corresponding pixels, and the pixels that are driven by the same driving voltage level are connected for averaging the voltage applied on the pixels (col. 5, lines 20-50, col. 10, lines 25-64 of Akimoto).

Akimoto differs from claims 21, 35, and 37 in that he does not specifically teach the timing controller comprises: "a frequency divider ...to generate a comparison result".

Spiotta teaches the timing controller (23, fig. 4) comprises: a frequency divider (i.e., programmable divider 230) for dividing the frequency of a clock signal according to a predetermined divisor; a counter (i.e., programmable counter 232) for counting the divided clock signal to generate a count value; and a comparator (234) for comparing the count value with a predetermined number to generate a comparison result (col. 5, lines 8-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the clock controller as taught by Spiotta in the system of Akimoto in order to accomplish high speed data transfer between the display system.

Regarding claims 22 and 23, the combination of Akimoto and Spiotta teaches the frequency divider (230) comprises an input port for receiving an input data to set the predetermined divisor and the comparator (234) comprises an input port for receiving an input data to set the predetermined number (col. 5, lines 8-20 of Spiotta).

9. Claims 18-20 and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 36, 38, 40, and 41 are allowed.

11. Applicant's arguments with respect to claims 1, 3-17, 21-23, 28-35, 37, and 39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer T. Nguyen whose telephone number is 571-272-7696. The examiner can normally be reached on Mon-Fri: 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick N. Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Nguyen
12/20/05

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SUPERVISORY PATENT EXAMINER